Remarks

I. Introduction

This is in response to the Office Action dated November 26, 2004. The Office Action rejected claims 10-13 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,163,856 (Dion). Claims 1-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Dion in view of U.S. Patent No. 6,647,387 (McKean). In response, Applicant has amended claims 1-4, 6, and 8-10. Applicant has canceled claims 14-21 in response to the Restriction Requirement. Claims 1-13 remain for consideration.

Applicant also recently received a Notice of Abandonment and submits herewith a Petition for Revival of an Application for Patent Abandoned Unintentionally Under 37 CFR 1.137(b) in response to the Notice of Abandonment.

II. Restriction Requirement

The Office Action required restriction to one of the following groups of claims:

Group I: Claims 1-13
Group II: Claims 14-21

In response, Applicant affirms the provisional election of Group I: Claims 1-13. Claims 14-21 have been cancelled without prejudice, and Applicant reserves the right to pursue these claims in one or more divisional or continuation patent applications.

III. Rejections under 35 U.S.C. §102

Claims 10-13 were rejected under 35 U.S.C. §102(e) as being anticipated by Dion. In order for a claim to be anticipated under 35 U.S.C. §102, **each and every** limitation of the claim must be found either expressly or inherently in a single prior art reference. PIN/NIP, Inc. v. Platte Chem. Co., 304 F.3d 1235,

1243 (Fed. Cir. 2002). In the present case, Dion does not show each and every limitation of claims 10-13. Therefore, Applicant requests the withdrawal of the rejection under 35 U.S.C. §102(e).

The present invention is generally directed to ensuring continuity and availability of data. The present invention changes the fundamental architecture of remotely mirrored storage systems from a **local storage subsystem** cooperating with a remote storage subsystem to a **local controller** cooperating with two or more **remote storage subsystems**. In accordance with the present invention, a bipolar mirror controller receives a write request from a server and sends the request to each of the remote mirror sites. Each remote mirror site then performs the write request at each location and sends an acknowledgement back to the bipolar mirror controller. The bipolar mirror controller then sends an acknowledgement back to the server.

Dion is directed to a file disaster recovery system that employs geographical replication of data from a local site to remote site. The replication occurs so that when the local site fails, clients of the local site are able to resume file operations at the remote site with little or no loss of file state. (Col. 4, lines 57-62). Dion is configured by having a primary server operating in cooperation with a secondary server. The primary and secondary servers are each coupled to stable file storage. The primary server responds to file system requests and checkpoints all necessary information to the secondary so the secondary can take over operations even in the case of a minor failure by the primary server. Both the primary and secondary servers are configured to execute the replication software. However, the software only executes in the server that is online. (Col. 5, lines 48-61).

Claim 10 has the limitations of:

> receiving a data write request **at a primary mirror controller**;
> sending, by the primary mirror controller, the data write
> request to each of at least two **remote mirror sites**...."

Dion does not show these limitations because Dion does not include a **primary mirror controller** communicating with two (or more) remote mirror sites.

Unlike Applicant's architecture, Dion instead falls under the prior art architecture of a **local storage subsystem** cooperating with a remote storage subsystem (see Fig. 1 and Fig. 2). Dion relies upon its primary file storage system. When failover occurs, Dion switches to the remote file storage system which has the data mirrored in the remote storage system. Thus, Dion does not disclose a primary mirror controller that is communicating with two or more remote mirror sites.

The Office Action states that Dion discloses receiving a data write request at a primary mirror controller because Dion discloses that the "geographical replication software running on the local site intercepts all file system requests issued by local clients." (Col. 5, lines 13-15). Therefore, the Office Action equates Dion's geographical replication software to Applicant's primary mirror controller. They are, however, very different because Applicant's primary mirror controller is not associated with a specific file storage system and only executes on the primary server. The primary mirror controller communicates with two or more remote mirror sites. Dion's geographical replication software, however, executes on the remote site upon a failover.

The Office Action states that Dion discloses sending, by the primary mirror controller, the data write request to each of at least two remote mirror sites by disclosing that the geographical replication software replicates file state information contents and logged write information to the remote site. As disclosed above, Dion's geographical replication software is not a primary mirror controller and, therefore, Dion does not disclose a primary mirror controller sending a data write request to remote mirror sites.

Dependent claims 11-13 are allowable for the reasons stated above and because they depend from an independent claim.

IV. Rejections under 35 U.S.C. §103

Claims 1-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Dion in view of McKean. Neither of the cited references, either alone or in combination, disclose Applicant's invention.

McKean is directed to a controller managing computer access to a number of storage volumes in a storage peripheral. A system administrator assigns a plurality of port IDs to a disk array controller. The system administrator configures a data structure in a memory of the controller such that at least a subset of the plurality of port IDs are mapped to particular ones of the number of storage volumes. In response to an access request by a computer (where the access request specifies a target port ID), the controller grants the computer access to only those storage volumes whose mapped port ID corresponds to the target ID.

Claim 1 claims the limitations of:

> a local site at a first location comprising:
> ... a primary mirror controller...
> at least two remote mirror sites, ... and wherein each remote
> mirror site comprises:
> a disk array controller....

As described above, Dion does not disclose a primary mirror controller. Instead, Dion falls under the prior art architecture of a local storage subsystem cooperating with a remote storage subsystem. The Office Action admits that Dion does not disclose using a disk array controller and relies on McKean to cure the deficiencies.

McKean fails to cure the deficiencies of Dion. McKean is directed to a controller managing computer access to a number of storage volumes in a storage peripheral. McKean does not, however, deal with data mirroring and, as a result, does not disclose a primary mirror controller. Thus, amended, independent claim 1 is allowable over Dion in view of McKean.

For the reasons discussed above, all independent claims are allowable over the cited art. Allowance of all independent claims is requested. All remaining claims are dependent upon an allowable independent claim and are therefore also allowable. In addition, the dependent claims add additional patentable subject matter and are also allowable for the reasons discussed below.

Dependent claim 8 contains the limitation of a backup site comprising a backup mirror controller and a backup server, and adapted to being operational when the local site ceases normal functions. Dion does not disclose a backup site having a backup mirror controller and adapted to being operational when the local site ceases normal functions. As described above, Dion does not disclose a primary mirror controller. Therefore, Dion does not disclose a mirror controller that backs up the primary mirror controller.
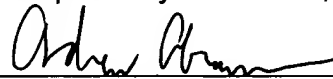
The Office Action states that Dion discloses this limitation with the remote site in Fig. 2 of Dion. The remote server in Fig. 2 of Dion, however, is not a backup **mirror controller**. Instead, the remote server is the site at which the data is mirrored and is not, therefore, a primary mirror controller for communicating with remote mirror sites.

McKean fails to cure the deficiencies of Dion because McKean does not disclose mirroring. Therefore, dependent claim 8 is allowable over Dion, either alone or in combination with McKean.

V. Conclusion

For the reasons discussed above, all pending claims are allowable over the cited art. Reconsideration and allowance of all claims is respectfully requested.

Respectfully submitted,

Andrew F. Abramson
Reg. No. 52,538
Attorney for Applicant
Tel.: 973-533-1616

Date: August 31, 2005
AT&T Corp
Room 2A-207
One AT&T Way
Bedminster, NJ 07921